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Graduates' perception of the relationship between technical and vocational education and training and graduates' employment prospects

Percepción de los graduados sobre la relación entre la educación y formación técnica y profesional y las perspectivas de empleo de los graduados.

Rabiul Awal*
https://orcid.org/0000-0002-5824-4724
National Academy for Educational Management (Bangladesh)

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*Corresponding author: awalrabiulais@gmail.com
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ABSTRACT

Industrialization and modernization have raised demand for skilled workers in many fields. Government and other institutions have promoted Technical and Vocational Education and Training (TVET) programmes to meet this demand by providing job-ready skills and knowledge. Despite these efforts, there are concerns about the effectiveness of TVET in terms of graduate employment prospects in Bangladesh. A clear understanding of TVET graduates' attitudes and experiences is essential to improving TVET effectiveness. The online survey data from these graduates provided valuable insights into their learning, skill development, and employment outcomes. Data was acquired from 152 respondents (n = 152) using convenience sampling and snowball sampling techniques. This study analysed the acquired data using descriptive statistics, factor analysis, and a multiple regression model in the SPSS programme. According to the findings, TVET graduates have an overwhelming perception of a positive relationship between TVET programmes and their employment prospects. The current study also identified two main aspects or factors, namely the 'skills development factor' and the 'employment benefits factor,' which can influence TVET graduates' perceptions. However, of these two components, the skills development aspect has a very high and significant impact on graduates' perceptions, while the employment benefits factor has no statistical effect.

Keywords. TVET, graduates, employability, human capital

RESUMEN

La industrialización y la modernización han incrementado la demanda de trabajadores cualificados en muchos campos. El gobierno y otras instituciones han promovido programas de Educación y Formación Técnica y Profesional (EFTP) para satisfacer esta demanda, proporcionando competencias y conocimientos orientados al empleo. A pesar de estos esfuerzos, persisten preocupaciones sobre la eficacia de la EFTP en relación con las perspectivas de empleo de los graduados en Bangladés. Comprender claramente las actitudes y experiencias de los graduados de EFTP es esencial para mejorar su efectividad. Los datos de una encuesta en línea a estos graduados ofrecieron información valiosa sobre su aprendizaje, desarrollo de competencias y resultados laborales. Se obtuvieron datos de 152 participantes (n = 152) mediante técnicas de muestreo por conveniencia y muestreo en cadena (snowball). Este estudio analizó los datos recopilados utilizando estadística descriptiva, análisis factorial y un modelo de regresión múltiple en el programa SPSS. Según los resultados, los graduados de EFTP tienen una percepción ampliamente positiva de la relación entre los programas de EFTP y sus perspectivas de empleo. El estudio también identificó dos aspectos o factores principales: el "factor de desarrollo de competencias" y el "factor de beneficios laborales", que pueden influir en las percepciones de los graduados de EFTP. Sin embargo, de estos dos componentes, el aspecto relacionado con el desarrollo de competencias tiene un impacto muy alto y significativo en las percepciones de los graduados, mientras que el factor de beneficios laborales no presenta un efecto estadísticamente significativo.

Palabras clave. TVET, graduados, empleabilidad, capital humano

INTRODUCTION

Technical and Vocational Education and Training (TVET) is broadly defined as "education that generally leads the receivers to gain practical skills, know-how, and understanding required for employment in a specific occupation, trade, or group of occupations" (Atchoarena & Delluc, 2002). Despite the occasional interchange of the terms "technical" and "vocational," we can analyse the two categories separately. Vocational training is typically defined as education and training that focuses more on practical skills and the ability to perform tasks related to working in a specific industry. In contrast, technical training is education and training that is similar in nature, but the focus is on technology and developments made in computers and digital information. Most people view TVET as crucial in equipping learners with the skills required to boost productivity, raise income levels, and gain access to employment opportunities (Bennell, 1999). TVET 's fundamental aim is to improve practical skills in learners, and gaining appropriate construction, design, and repair skills requires well-functioning infrastructural and machinery facilities to ensure efficient, effective, and sustainable employable skills for learners (Omar et al., 2020).

According to Khilji et al. (2012), every developing nation should make it their goal to establish a system of technical and vocational education for the youth with the aim of meeting the demand for skilled labour in a rapidly growing contemporary industry. Kazmi's (2007) study revealed that investing in technical and vocational training is the most effective approach to enhancing a country's workforce productivity. It is especially important in emerging countries with high numbers of young, unskilled workers (Omar et al., 2020). Recognizing the significance of TVET in tackling unemployment, the government and donor agencies are launching several initiatives to enhance TVET enrolment in Bangladesh. The TVET Reform Project 2008–15, National Skills Development Policy (NSDP) 2011, and the implementation of the STEP (Skills and Training Enhancement

Project) and SEIP (Skills for Employment Investment Programme) programmes aim to expand TVET and improve employment opportunities for Bangladeshi citizens. However, despite the introduction of significant TVET initiatives to promote employment, Bangladesh has conducted few studies to investigate whether the existing TVET system enhances the employment prospects of TVET graduates. Understanding the perceptions and experiences of TVET graduates about their employability prospects is crucial to enhancing the overall effectiveness of TVET programmes. This study assesses the perceptions of TVET graduates regarding the relationship between TVET programmes and graduates' employment prospects in Bangladesh. To achieve this research objective, this study investigates the answers to the following two research questions:

1. To what extent do TVET graduates believe that the TVET programmes enhance graduates' employment prospects?
2. What are the significant factors that influence perceptions of the TVET-employment prospects relationship?

Overall, this research will contribute valuable insights into the state of TVET in Bangladesh, enabling policymakers and educational institutions to implement targeted interventions that strengthen TVET programmes and improve graduates' employability prospects, thus driving economic growth and sustainable development in the country.

LITERATURE REVIEW

It is widely acknowledged that technical and vocational education and training (TVET) is essential to enhancing employment (Subrahmanyam, 2013). A gap between what the workplace requires and what schools teach causes unemployment among youth. The International Labour Organization (ILO) (2012) cites an increasing mismatch between the supply and demand for skills as a major cause of high unemployment worldwide, especially among young people in developing nations. According to UNESCO (2016), among the causes of unemployment are a lack of relevant work experience, insufficient information about job opportunities, a lack of necessary life skills for industrial job roles, and weak entrepreneurship skills. The employment opportunities of graduates have an impact on future economic growth, both locally and globally (UNESCO, 2016).

Individuals, on the other hand, may be able to increase their own employment opportunities by increasing their employability through education and skill training (ILO, 2012). TVET is well situated to address the skills mismatch challenges that have hindered many people's smooth transitions from schooling to employment due to its focus on the workplace and the development of employable skills. De et al. (2003) assert that TVET, a blend of education and training, serves as a tool for enhancing human capital, thereby boosting productivity and employability in the post-industrial era. Schultz (1960) and Becker (1962) developed the idea of human capital more than 60 years ago, and it remains a strong conceptual framework for understanding the relationship between education and employment. A person's knowledge, abilities, skills, and aptitudes combine to form human capital, which they can use to contribute to productive work. TVET is an effective way to create human capital, helping people in and out of school acquire skills that will help them find work. Recent research reveals that TVET generates greater returns than either normal secondary education or higher education, mostly due to its emphasis on delivering skills that are relevant to the workforce (Kuepie et al, 2009). TVET students, who face challenges in university admission, have the opportunity to receive training and education, thereby developing essential skills that contribute to societal development (Dandala, 2021).

Several scholars stated that TVET gives students hands-on, practical training in job-market-relevant skill areas. According to them, graduates who learn these skills are better prepared to enter the labour market and contribute to the economy. Table below illustrates some of the literature that supports TVET.

Table 1. Literature on how TVET influences employment and employability.

Variable/Statement	Explanation with Descriptive Behavior	Evidence in Literature
TVET provided specific skills needed by employers	TVET provides specific skills needed by employers by using an industry-informed curriculum and focusing on industry-relevant skills, thus offering higher employment opportunities.	Bennell, 1999; Deissinger & Gonon, 2016; Okolie et al., 2019
TVET leads to well paid jobs	By providing learners with industry-relevant skills, focusing on high-demand occupations, and offering higher productivity, TVET can lead to well-paid jobs. The prospect of well-paid employment makes TVET attractive.	Schultz, 1961; Bennell, 1999; Winch, 2013; Almendarez, 2013; UNESCO, 2021
TVET helped in developing practical skills	TVET programs provide students with practical skills through hands-on training and work-based learning. Practical skills can give a job seeker an advantage in the competitive job market.	Omar et al., 2020; Hoftijzer et al., 2020
TVET helped to acquire theoretical knowledge	TVET programs provide learners with classroom-based instruction that covers key concepts, principles, and theories related to their chosen field. Theoretical understanding in a field can boost one's employability.	Kilbrink, 2012b; UNESCO-UNEVOC, 2012
TVET motivates for lifelong learning	Lifelong learning can help TVET graduates stay competitive in the job market and advance in their careers.	Hughes, 2005; Cusumano, 2017; Kanwar et al., 2019; UNESCO, 2016
TVET leads to higher productivity in job	TVET can improve job productivity by providing learners with industry-relevant training and specializing in a particular field, resulting in increased employment opportunities for individuals.	Schultz, 1961; Bennell, 1999; Atchoarena & Delluc, 2002; Sala & Silva, 2013;
TVET graduates need less time to find jobs	Industry-relevant skills, hands-on experience, and internship opportunities help TVET graduates get jobs faster.	Cedefop, 2013; Leyaro & Joseph, 2019; Salman, 2022.
TVET can ensure more overseas employment	International certifications, language learning, cultural competence, and overseas internships can help TVET graduates get jobs abroad.	Salman, 2022; Diop, 2020.
TVET enhances entrepreneurial skills	Ability to discover new problems, reveal potential niche opportunities, initiate the original business process, and make profits.	Pitan, 2017; Okolie et al., 2019; Tomlinson, 2017; Kerre & Hollander, 2009; Badawi, 2013.
TVET enhances graduates' employment prospects	TVET programs offer practical skills, employability skills, labor market relevance, entrepreneurship opportunities, and social inclusion, which can collectively contribute to the enhancement of TVET graduates' employment prospects.	Biavaschi et al., 2013; Subrahmanyam, 2013;

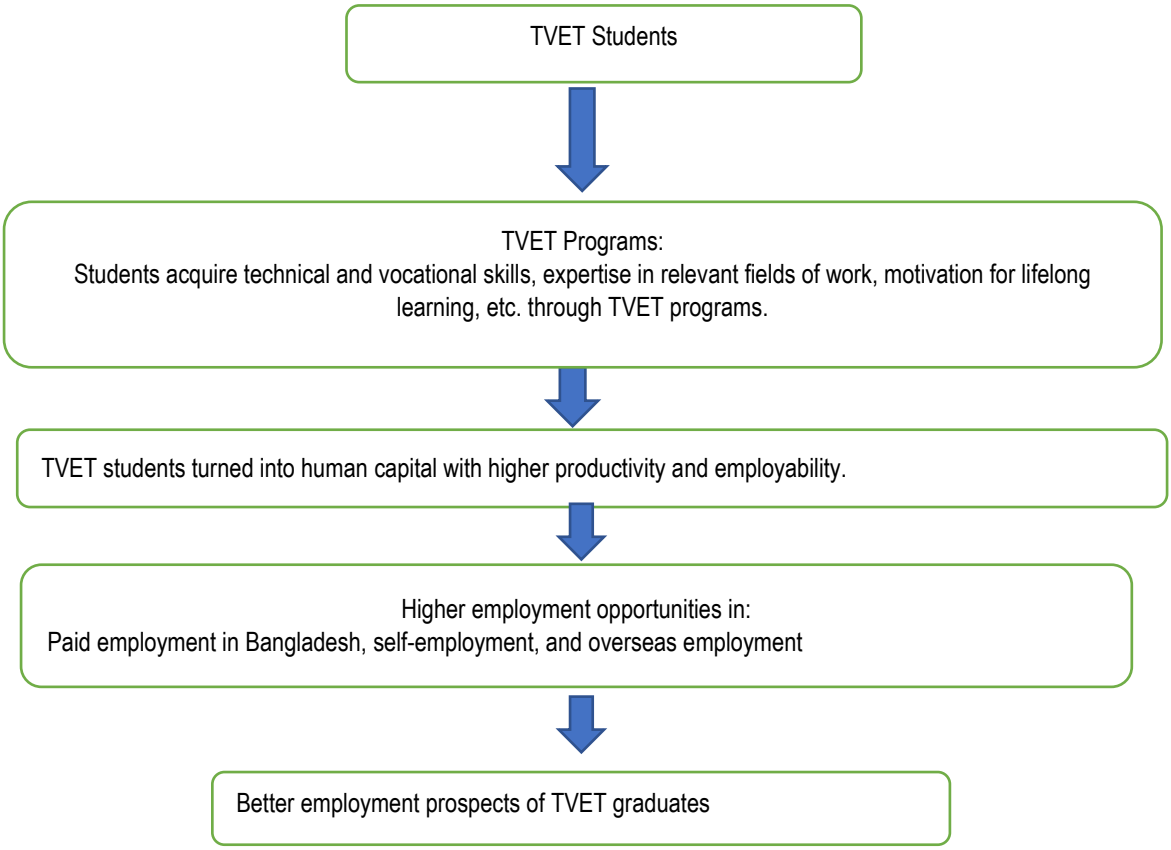
However, some of the critics (Krueger & Kumar, 2004; cited in Shi & Bangpan, 2022) have raised questions about the ability of TVET to produce competent students and address the issue of rising unemployment. In addition, some critics claim that due to the high cost of employee training and equipment, TVET has a lower labor market return than general education (Ryan, 2002; Tsang, 1999; cited in Shi & Bangpan, 2022).

Conceptual model/framework

The framework started with the students, who are the targets of TVET. Students who enrol in TVET acquire technical and vocational skills that make them experts in the relevant field of work and give them motivation for lifelong learning. Education and training in TVET programmes turn the graduates into human capital, thus increasing their productivity and employability. Then, these highly employable graduates may contribute in two ways, such as by replacing existing employees with less productivity and creating new job opportunities for themselves as well as for others. When

a vocationally trained, highly productive labour force is replaced with an existing unskilled labour force, it is expected to enhance the overall expansion of the economy, which may lead to new job creation in the economy as a result. In addition, TVET may produce more entrepreneurs who can confirm self-employment and create employment opportunities for others. Moreover, a TVET graduate is more likely to have overseas employment opportunities than an unskilled person, which is a form of job creation for the home country. Finally, these higher employment opportunities for TVET graduates in paid employment in Bangladesh, in self-employment, and overseas employment lead to an enhancement of their employment prospects.

Figure 1. Conceptual framework of the TVET-employment prospects model, developed by the author.



Research Hypotheses

Based on the conceptual model and existing literature review, the following assumptions have been made for this study:

H1: Technical and Vocational Education and Training (TVET) programs positively impact the employment prospects of the graduates.

H2: The "skills development factor" significantly affects graduates' perception of employment.

H3: The "job benefits factor" significantly affects graduates' perception of employment.

These assumptions are based on the proposed conceptual framework and supported by human capital theory (Becker, 1962; Schultz, 1961), which suggests that investment in TVET programs (for developing relevant skills) increases individuals' productivity and employability. The two factors such as "skills development factor" and "job benefits factor" mentioned in the study (H2 and H3) were extracted through exploratory factor analysis (EFA) and regression analysis was applied to assess their impact.

METHODOLOGY

Data Collection

The present study aims to examine the graduates' perceptions regarding the correlation between TVET and the employment prospects of TVET graduates. In order to accomplish this, the researcher conducted an extensive literature review and picked ten (10) statements or claims of relevant research that support a favourable correlation between TVET and graduates' employment prospects. Subsequently, the researcher prepared a Likert scale online survey questionnaire using Google Form consisting of these ten statements and claims regarding the positive correlation between TVET and employment. To gather students' perceptions of these statements or claims, the researcher paired the survey questionnaire with an information sheet and distributed it via email, Messenger, or WhatsApp to a list of potential participants. The researcher requested that the participants carefully read the information sheet and provide their responses to the questionnaire within the allocated time frame. The questionnaire contained a total of three different sections. Section one was about the participants' consent; section two aimed to gather demographic data from respondents (Item 1- 6); and section three was made to assess respondents' perceptions towards the TVET-employment relationship. In Section 3, nine Likert scale items were designed to evaluate the opinions of the respondents regarding the TVET-employment relationship (items 7–15) and another Likert scale item (item 16) to explore the overall perceptions of the students about whether TVET in Bangladesh can enhance graduates' employment prospects or not. This study graded the Likert scale items using a scale that ranged from strongly agree (SA = 5) to strongly disagree (SD = 1).

Sample

The population of the current study is made up of TVET graduates in Bangladesh who achieved at least a higher secondary certificate or diploma level education from the TVET system. Using the convenience sampling method, the researcher first selected three polytechnic institutes for this study. These TVET institutions included the Habiganj Polytechnic Institute, the Moulvibazar Polytechnic Institute, and the Brahmanbaria Polytechnic Institute. Because the researcher was close to these three polytechnic institutions, he had easy access to the target samples. After selecting three different polytechnic institutes, the researcher employed the snowball sampling technique. The snowball sampling technique selects participants based on referrals from previous participants (Trochim, 2005). Finally, in total, 152 respondents took part in this study from the three conveniently selected polytechnic institutes.

Data Analysis

The study used the Statistical Package for Social Science (SPSS) software (Version SPSS 25) for Windows to analyse the collected data. After collecting the data, the researcher conducted a test of normality (the Kolmogorov-Smirnov test) to determine whether the Likert data was normally distributed or not. The test result revealed that the data was not normally distributed. Therefore, this study applied non-parametric tests like the Mann-Whitney U-test to identify statistically significant differences between male and female students and the Kruskal-Walli's test to identify statistically significant differences in views across education institutions (Habiganj, Moulvibazar, and Brahmanbaria) and employment status (unemployed, employed, or self-employed). Finally, descriptive statistics, exploratory factor analysis (EFA), and multiple regression analysis were applied to satisfy the relevant research questions.

Validity and Reliability

The researcher used the SPSS programme to run a Pearson correlation test and calculated the standard deviation of each Likert item to verify the validity of the Likert scale questions.

Table 2. Pearson's correlation coefficients

	Std. Deviation										
Survey Items		Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
Q7	1.250	1									
Q8	1.356	.334	1								
Q9	1.150	.631	.457	1							
Q10	1.198	.557	.458	.737	1						
Q11	1.105	.580	.430	.700	.784	1					
Q12	1.336	.379	.938	.507	.522	.476	1				
Q13	1.364	.367	.957	.491	.498	.465	.975	1			
Q14	1.173	.605	.523	.707	.687	.698	.551	.536	1		
Q15	1.156	.602	.520	.707	.693	.719	.544	.533	.983	1	
Q16	1.161	.591	.519	.691	.653	.660	.547	.537	.973	.956	1

The obtained Pearson correlation coefficients for all Likert questions were higher than the minimum acceptable value or critical value (0.160) of the Pearson coefficient, which was set at 152-2=150 degrees of freedom (significance level of $\alpha = 0.05$ for a two-tailed test). So, all of the Likert questions were considered to be valid. Furthermore, the standard deviation values further validated all the items. Statisticians have suggested that measurements with standard deviations of ±2 are closer to the actual value. Considering the standard deviation, each item is within a reasonable range of ±2 (see table 2), indicating a validity.

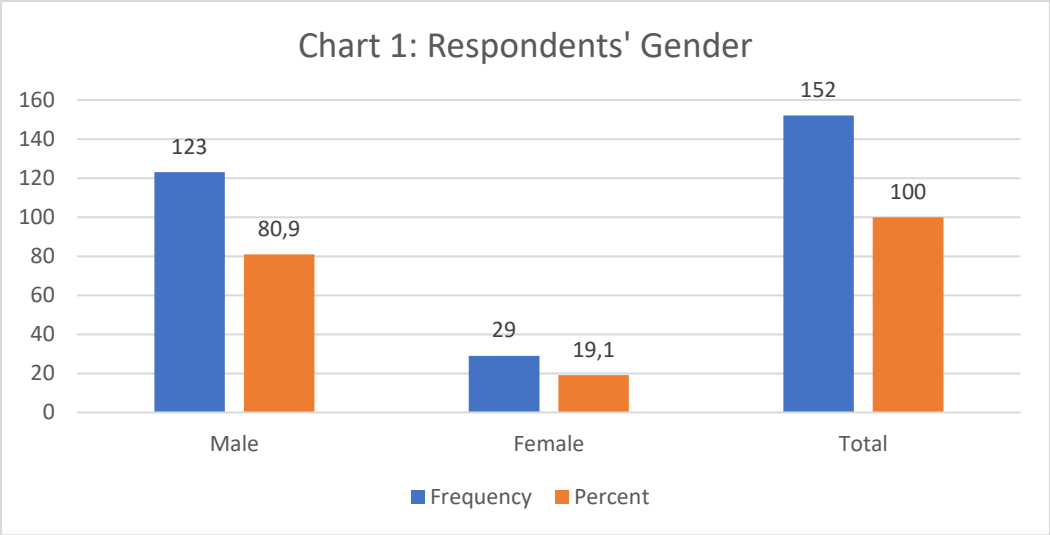
The researcher also conducted Cronbach's alpha test to confirm the reliability of the data. A Cronbach alpha value that is close to 1 indicates high internal consistency or reliability among the items. The study concluded that the questionnaires' data were reliable because the Cronbach Alpha for 10 Likert questions is 0.941, which is very close to 1.

FINDINGS AND DISCUSSIONS

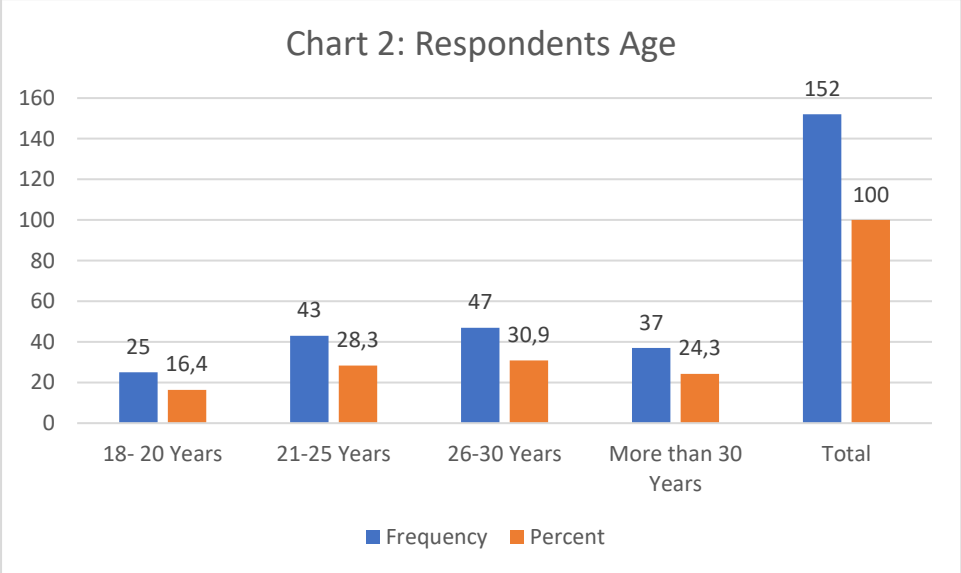
Section A

Demographic Information, Normality Test Results, and Hypothesis Test Results

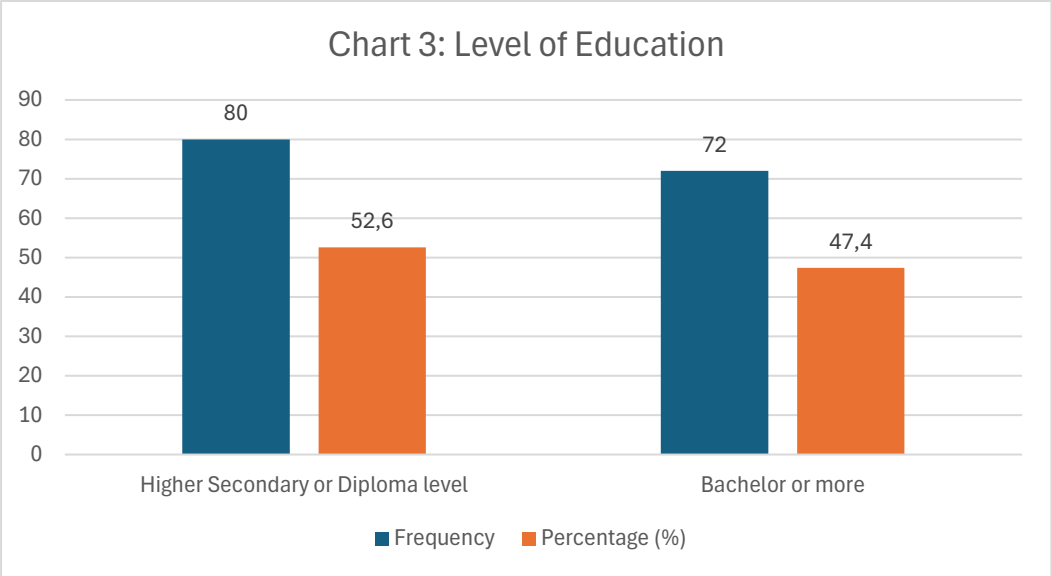
The questionnaire items 1-6 were used to gather demographic information of the respondents. The current study included 152 graduates from Habiganj, Moulvibazar, and Brahmanbaria polytechnic institutes (n = 152).



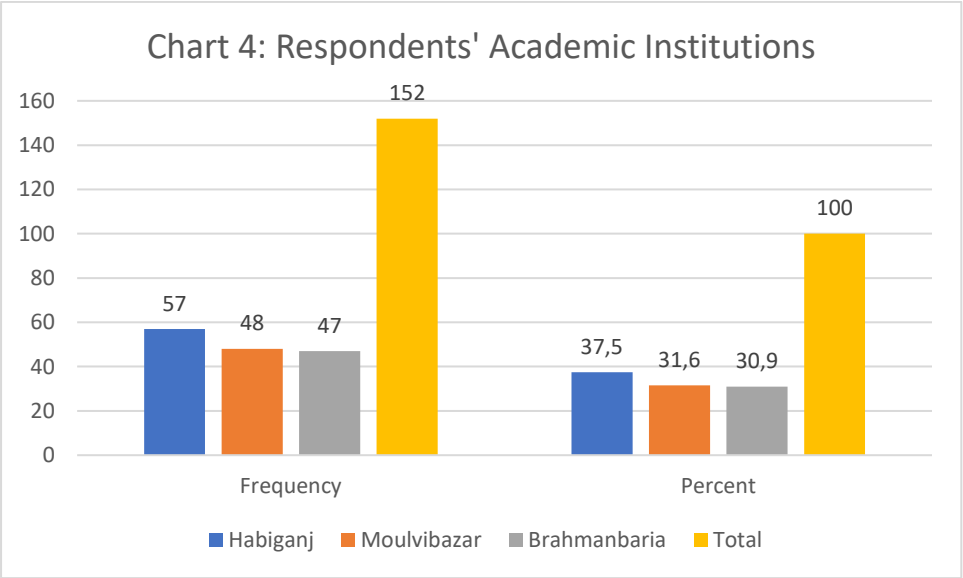
According to the data collected for this study, 80.9% were male graduates, and a total percentage of 19.1% were female students from the three selected polytechnic institutes.



The respondents' ages ranged from 18–20 years old to over 30 years old. In this study, participants who reported their age between 26 and 30 years were 30.9%, representing the highest percentage. On the other hand, the students who reported their age of 18–20 years had the smallest percentage (16.4%).



A majority (52.6%) of the participants (80 out of 152) were qualified with higher secondary or diploma-level education from the TVET stream. 47.4% of the remaining participants held a bachelor's or higher-level educational degree.



According to chart 4, 37.5% (57 out of 152) of the respondents were from Habiganj Polytechnic Institute, 31.6% (48 out of 152) from Moulvibazar Polytechnic Institute, and 30.9% (47 out of 152) from Brahmanbaria Polytechnic Institute.

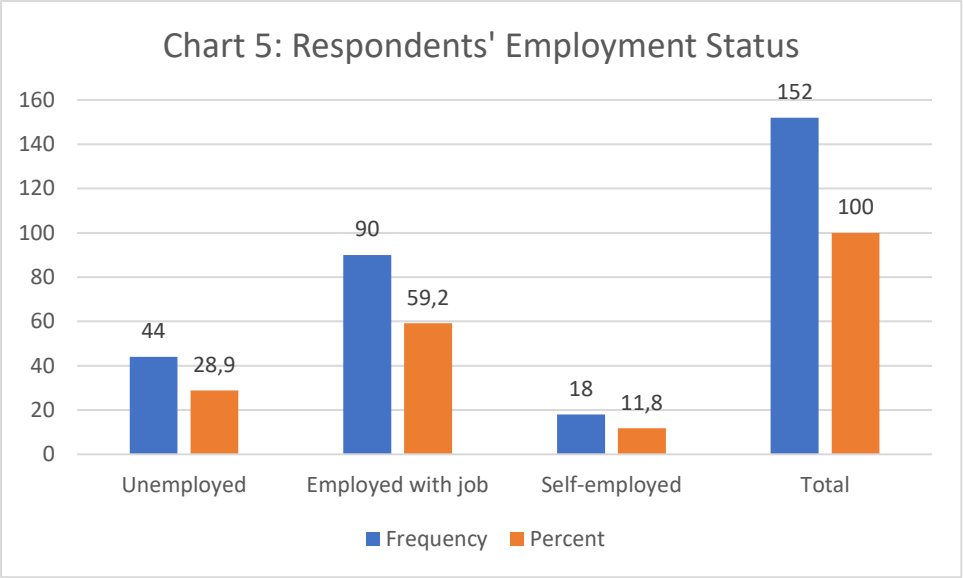


Chart 5 indicates that a majority of the respondents were employed with salaries (59.2%), whereas 28.9% were unemployed and 11.8% were self-employed.

Normality Test Results

To check whether the data collected through the Likert scale was normally distributed or not, a Kolmogorov-Smirnov normality test (since n≥50) was performed through SPSS.

Table 3. Normality test results

	Kolmogorov-Smirnova		
	Statistic	df	Sig.
TVET provides specific skills needed by employers	0.267	152	.00
TVET leads to well paid jobs	0.274	152	.00
TVET helps in developing the practical skills	0.33	152	.00
TVET provides theoretical knowledge	0.295	152	.00
TVET motivates for lifelong learning	0.329	152	.00
TVET leads to higher productivity in job	0.28	152	.00
TVET graduates need less time to find job	0.283	152	.00
TVET offers more overseas employment skills	0.317	152	.00
TVET enhances entrepreneurial skills	0.326	152	.00
TVET enhances graduates' employment prospects	0.297	152	.00

The results indicated that the data was not normally distributed because p = .00 (if $p < 0.05$, we do not believe that our variable follows a normal distribution in our population). Therefore, null hypothesis tests were performed using non-parametric tests such as the Mann-Whitney test and Kruskal-Wallis's test.

Statistical Hypothesis Test Results

Null hypothesis 1 (H1): There is no significant difference in the mean responses of male and female respondents about the survey items.

Table 4. Mann-Whitney test (grouping variable- gender)

Survey Item	Survey Statement	Asymp. Sig. (2-tailed)	Decision (p<0.05)
7	TVET provides specific skills needed by employers	0.479	Hypothesis accepted
8	TVET leads to well paid jobs	0.091	Hypothesis accepted
9	TVET helps in developing the practical skills	0.477	Hypothesis accepted
10	TVET provides theoretical knowledge	0.758	Hypothesis accepted
11	TVET motivates for lifelong learning	0.350	Hypothesis accepted
12	TVET leads to higher productivity in job	0.101	Hypothesis accepted
13	TVET graduates need less time to find job	0.082	Hypothesis accepted
14	TVET offers more overseas employment skills	0.454	Hypothesis accepted
15	TVET enhances entrepreneurial skills	0.355	Hypothesis accepted
16	TVET enhances graduates' employment prospects	0.441	Hypothesis accepted

A Mann-Whitney test was conducted to compare opinions about the TVET-employment relationship related Likert items between male (n = 123) and female (n = 29) respondents. The result suggests that gender really has no effect on the respondents' opinions. Specifically, there is no statistically significant difference in mean scores between male and female respondents because the p values for all Likert items are greater than the threshold value of .05. Therefore, we accept the null hypothesis.

Null hypothesis 2 (H2): There is no significant difference in the mean responses of the respondents selected from three different polytechnic institutes about the survey items.

To check the hypothesis, Kruskal-Wallis's test was done with polytechnic institutions as the independent variable and TVET-employment relationship-related survey items as the dependent variables at the p<.05 significant level of condition.

Table 5. Kruskal-Wallis's test results (grouping variable- education institutions)

Survey Item	Survey Statement	Asymp. Sig. (p-values)	Decision (p<0.05)
7	TVET provides specific skills needed by employers	0.816	Hypothesis accepted
8	TVET leads to well paid jobs	0.169	Hypothesis accepted
9	TVET helps in developing the practical skills	0.736	Hypothesis accepted
10	TVET provides theoretical knowledge	0.33	Hypothesis accepted
11	TVET motivates for lifelong learning	0.49	Hypothesis accepted
12	TVET leads to higher productivity in job	0.099	Hypothesis accepted
13	TVET graduates need less time to find job	0.209	Hypothesis accepted
14	TVET offers more overseas employment skills	0.276	Hypothesis accepted
15	TVET enhances entrepreneurial skills	0.249	Hypothesis accepted
16	TVET enhances graduates' employment prospects	0.433	Hypothesis accepted

The Kruskal-Wallis's test result recommends that there is no significant difference among the responses of the graduates from three polytechnic institutions (Habiganj Polytechnic, Moulvibazar Polytechnic, and Brahmanbaria Polytechnic) since all the p-values > 0.05. Therefore, we retain the null hypothesis, which states that the mean responses of the graduates selected from three different polytechnic institutes do not significantly differ.

Null hypothesis 3 (H3): There is no significant difference among the mean responses of employed, self-employed, and unemployed respondents about the survey items.

To check the third null hypothesis, a further Kruskal-Wallis's test was done to compare the responses of the unemployed, employed, and self-employed participants. The significant factor is p<.05.

Table 6. Kruskal-Wallis's test results (grouping variable- employment status)

Survey Item	Survey Statement	Asymp. Sig. (p-values)	Decision (p<0.05)
7	TVET provides specific skills needed by employers	0.293	Hypothesis accepted
8	TVET leads to well paid jobs	0.272	Hypothesis accepted
9	TVET helps in developing the practical skills	0.481	Hypothesis accepted
10	TVET provides theoretical knowledge	0.274	Hypothesis accepted
11	TVET motivates for lifelong learning	0.691	Hypothesis accepted
12	TVET leads to higher productivity in job	0.189	Hypothesis accepted
13	TVET graduates need less time to find job	0.193	Hypothesis accepted
14	TVET offers more overseas employment skills	0.338	Hypothesis accepted
15	TVET enhances entrepreneurial skills	0.441	Hypothesis accepted
16	TVET enhances graduates' employment prospects	0.40	Hypothesis accepted

Depending on the employment status of the respondents, Kruskal-Wallis's test results indicate that there is no significant difference in the mean scores of the survey items (p-values > 0.05). Hence, there is no statistically significant difference among the mean responses of unemployed, employed, and self-employed respondents.

Null hypothesis 4 (H4): There is no significant difference in the mean responses of two education groups about the survey items.

Table 7. Mann-Whitney test results (grouping variable- level of education)

Survey Item	Survey Statement	Asymp. Sig. (2-tailed)	Decision (p<0.05)
7	TVET provides specific skills needed by employers	0.155	Hypothesis accepted
8	TVET leads to well paid jobs	0.115	Hypothesis accepted
9	TVET helps in developing the practical skills	0.30	Hypothesis accepted
10	TVET provides theoretical knowledge	0.317	Hypothesis accepted
11	TVET motivates for lifelong learning	0.043	Hypothesis Rejected
12	TVET leads to higher productivity in job	0.082	Hypothesis accepted
13	TVET graduates need less time to find job	0.122	Hypothesis accepted
14	TVET offers more overseas employment skills	0.131	Hypothesis accepted
15	TVET enhances entrepreneurial skills	0.04	Hypothesis Rejected
16	TVET enhances graduates' employment prospects	0.111	Hypothesis accepted

The Mann-Whitney test result revealed that all the survey items have Asymp. Sig. values (p-values) higher than the threshold of 0.05 except survey item 11 (TVET motivates lifelong learning; p-value is 0.043) and survey item 15 (TVET enhances entrepreneurial skills; p-value is 0.04). That means the level of education of the respondents significantly influences their perceptions of whether TVET motivates lifelong learning and enhances entrepreneurial skills. On the other hand, the null hypothesis (H4) is accepted regarding survey items 7–10, 11–14, and 16.

Section B

This section demonstrates the findings relevant to research questions 1 and 2.

TVET Graduates' Perceptions of the Relationship Between TVET Programmes and Employment of the Graduates

The collected Likert scale data were analysed to address the first research question. Among them, Likert questionnaire items 7–15 evaluated respondents' perceptions of the relationship between TVET and graduates' employment prospects, and item 16 assessed graduates' overall perceptions of whether TVET can enhance graduates' employment prospects.

The current study took into account the mean score of each Likert item to interpret the meaning of the collected data. The five-point Likert scale is regarded as an interval scale, and the mean score has a lot of importance (Pimentel, 2010). The following table shows the mean scores of items 7–16.

Table 8. Results of the items 7-16

Items	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean	Decision
7. TVET provides specific skills needed by employers	18 (11.8)	13 (8.6)	28 (18.4)	61 (40.1)	32 (21.1)	3.50	High perception
8. TVET leads to well paid jobs	30 (19.7)	19 (12.5)	21 (13.8)	62 (40.8)	20 (13.2)	3.15	Low perception
9. TVET helps in developing practical skills	14 (9.2)	10 (6.6)	19 (12.5)	78 (51.3)	31 (20.4)	3.67	High perception
10. TVET provides theoretical knowledge	15 (9.9)	9 (5.9)	23 (15.1)	67 (44.1)	38 (25.0)	3.68	High perception
11. TVET motivates for lifelong learning	12 (7.9)	9 (5.9)	20 (13.2)	79 (52.0)	32 (21.1)	3.72	Highest perception
12. TVET leads to higher productivity in job	28 (18.4)	19 (12.5)	21 (13.8)	64 (42.1)	20 (13.2)	3.19	Low perception
13. TVET graduates need less time to find job	31 (20.4)	17 (11.2)	20 (13.2)	64 (42.1)	20 13.2)	3.16	Low perception
14. TVET offers more overseas employment skills	16 (10.5)	12 (7.9)	23 (15.1)	76 (50.0)	25 (16.4)	3.54	High perception
15. TVET enhances entrepreneurial skills	16 (10.5)	12 (7.9)	23 (15.1)	79 (52.0)	22 (14.5)	3.52	High perception
16. TVET enhances graduates' employment prospects	14 (9.2)	14 (9.2)	26 (17.1)	71 (46.7)	27 (17.8)	3.55	High perception
Overall mean						3.47	

The results in Table 8 reveal that the overall mean is approximately 3.47, indicating that respondents agree on the positive correlation between TVET and graduates' employment prospects. Any item with a mean score less than the overall mean score will be perceived as having low perceptions, while a mean score that exceeds the overall mean score will be treated as having high perceptions of the participants. However, there are notable variations in perceptions across different aspects of TVET. Specifically, respondents have high perceptions of the statements that TVET provides specific skills needed by employers (mean 3.50), TVET helps in developing practical skills (mean 3.67), TVET provides theoretical knowledge (mean 3.68), TVET motivates for lifelong learning (mean 3.72), TVET offers more overseas employment skills (mean 3.54), TVET enhances entrepreneurial skills (mean 3.52), and TVET enhances graduates' employment prospects (mean 3.55). On the other side, the mean scores for items 8 (TVET leads to well-paid jobs), 12 (TVET leads to enhanced productivity in the job), and 13 (TVET graduates need less time to find jobs) are 3.15, 3.19, and 3.16, respectively. As a result, the majority of participants have low perceptions about whether TVET leads to well-paying jobs, increases job productivity, and requires less time for TVET graduates to find a job.

The current study revealed that the highest number of respondents (73.1% with a mean score of 3.72) agree with the statement that TVET motivates lifelong learning. This result is consistent with those of Maclean & Wilson (2009) and Hughes (2005). Hughes (2005) argues that TVET

increases student interest because of its direct connection to the world of work, which in turn increases motivation for lifelong learning. TVET meets the basic needs of human motivation and achievements, particularly the ability to work efficiently and creatively (Hughes, 2005 cited in Cusumano, 2017). However, question 8 (TVET leads to well-paid work) had the lowest amount of agreement from participants (54%) and the lowest mean score (3.15), indicating that a significant proportion of participants do not believe there is a link between TVET and high-paying employment.

Factor Analysis for Exploring the Significant Factors Influencing the Perceptions of TVET-Employment Relationships

An explanatory factor analysis (EFA) was conducted on a sample (N = 152) using principal axis factoring with ProMax with Kaiser Normalization rotation to explore the significant factors that can influence the graduates' perceptions of the TVET-employment relationship. The Kaiser-Meyer-Olkin Measure of Sample Adequacy (KMO) value is 0.859, and Bartlett's Test of Sphericity (sig value) is .000, which indicates that the data set is appropriate for factor analysis. There was no multicollinearity among the variables because the determinant value was 2.85, which is higher than the threshold value of .00001.

The results of the exploratory analysis revealed two distinct factors. Factor one consisted of six items labelled as the 'Skills Development Factor', and the items were 'TVET provides specific skills needed by employers', TVET helps in developing practical skills', 'TVET provides theoretical knowledge', 'TVET motivates for lifelong learning', 'TVET offers more overseas employment skills', and 'TVET enhances entrepreneurial skills'. Factor two was labelled 'Job Benefits Factor' and consisted of three items. The items are 'TVET leads to well-paid jobs,' 'TVET graduates need less time to find jobs,' and 'TVET leads to higher productivity in jobs.'

Then a reliability test of the new factors is done to check whether the new factors are reliable or not. Table 8 shows the factor loading of the accepted items, the extracted new factors, the reliability of the new factors, and the mean and standard deviation of the extracted new factors.

Table 9. Factor analysis of constraint items and score

	Loading	**New Factor**	Mean	**Cronbach Alfa (α)**	**SD**
15. TVET enhances entrepreneurial skills	0.892	'Skills Development Factor'	3.606	0.930	1.009
14. TVET offers more overseas employment skills	0.878				
11. TVET motivates for lifelong learning	0.847				
9. TVET helps in developing practical skills	0.821				
10. TVET provides theoretical knowledge	0.808				
7. TVET provides specific skills needed by employers	0.718				
13. TVET graduates need less time to find job	0.997	'Job Benefits Factor'	3.17	0.985	1.332
8. TVET leads to well paid jobs	0.974				
12. TVET improves productivity	0.956				

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.

The Cronbach alpha for two new factors is 0.930 and 0.985, respectively. This suggests that both the newly extracted factors surpass the standard Cronbach Alpha value of 0.7 (Nunnally, 1978; cited in Sarr & Ba, 2017), indicating their reliability.

Table 9 also shows the mean score and the standard deviation (SD) for the two newly extracted factors. Among the two new factors, 'Skills Development Factor' has the higher score (M = 3.606, SD = 1.009) and 'Job Benefits Factor' has the lower score (M = 3.17, SD = 1.332). However, based on the mean scores of the newly identified factors, respondents appear to have greater choices for the skills development factor as a TVET-employment relationship factor (mean 3.606) than the job benefits factor (mean 3.17).

Multiple Regression Analysis

After exploring the potential factors, a multiple regression analysis was done to check the influence of two independent variables extracted from factor analysis such as "'Skills Development Factor' and 'Job Benefits Factor' on the dependent variable 'TVET enhances graduates' employment prospects' (item 16 of the questionnaire). The regression method was Enter. The following hypotheses were proposed:

H1: There is a significant impact of the 'Skills Development Factor' on the dependent variable (TVET enhances graduates' employment prospects).

H2: There is a significant impact of the 'Job Benefits Factor' on the dependent variable (TVET enhances graduates' employment prospects).

Table 10. Results summary of ANOVA

Model	R	R^2	Adjusted R^2	DF	F	Sig.
1	.876	0.767	.764	2	245.375	.000
Dependent Variable: TVET enhances graduates' employment prospects. Predictors: (Constant), 'Skills Development Factor', Job Benefits Factor'						

The dependent variable "TVET enhances graduates' employment prospects" was regressed on predicting variables 'Skills Development Factor' and 'Job Benefits Factor'. The independent variables significantly predict the dependent variable 'TVET enhances graduates' employment prospects', $F(2, 151) = 245.375$, $p<.05$, which indicates that the two factors such as 'Skills Development Factor' and 'Job Benefits Factor' have a significant impact on the independent variable. Moreover, the R2 =.767 indicates that the model explains 76.7% of the variance in the perception that 'TVET enhances graduates' employment prospects.'

Additionally, coefficients were further assessed to ascertain the influence of each factor on the dependent variable (TVET enhances graduates' employment prospects').

Table 11. Summary of the findings of regression analysis

Hypothesis	Regression Weights	Beta Coefficient	t-value	p-value	Results
H1	'Skills Development Factor' → TVET enhances graduates' employment prospects'	.956	17.40	.000	supported
H2	'Job Benefits Factor'→ TVET enhances graduates' employment prospects'	.066	1.597	.112	Not supported

H1 evaluates whether 'Skills Development Factor' significantly and positively affects the perception that "TVET enhances graduates' employment prospects". The results revealed that 'Skills Development Factor' has a significant and positive impact on the perception that "TVET enhances graduates' employment prospects" (β =.956, t = 17.40, p =.000). Hence, H1 was

supported. H2 evaluates whether the 'Job Benefits Factor' significantly affects the perception that "TVET enhances graduates' employment prospects". The results showed that the impact of the 'Job Benefits Factor' on the perception that "TVET enhances graduates' employment prospects" is not statistically significant (β =.066, t = 1.597, p =.112). Hence, H2 was not supported.

Overall, the regression model results show that TVET graduates put a greater emphasis on the 'skills development factor' when evaluating the positive relationship between TVET programmes and graduates' employment prospects. For instance, when a TVET program enhances the skills of its graduates, participants perceive that there is a more robust positive association between the TVET programme and TVET graduates' prospects for employment. In contrast, this study shows no statistical significance for the 'job benefits factor' when evaluating the association between TVET programmes and graduates' prospects for employment.

CONTRIBUTIONS AND IMPLICATIONS

This study looks at students' perceptions about how well TVET programs help graduates find jobs in Bangladesh. It points out two key factors that shape how graduates view TVET: 'skills development' and 'employment benefits.' This research addresses a gap in the literature on TVET in Bangladesh by examining the real-world experiences of graduates and offering data-driven recommendations. In addition, this study contributes support to the Human Capital Theory by demonstrating how skill-oriented training, particularly through technical and vocational education and training (TVET), enhances the employability of students. As a result, it highlights the importance of real-world skills in economic activity. In addition, it enriches existing career decision-making models by showing that students value skill development over the financial compensation from their employers. It is crucial to note that business education frameworks are relevant in this respect. These frameworks take into consideration non-economic factors such as technical skills, self-efficacy, and personal development. These factors impact educational and career choices.

CONLUSIONS AND LIMITATIONS

This study discusses both the presence of a relationship and the underlying factors shaping Bangladeshi TVET graduates' perceptions of the connection between Technical and Vocational Education and Training (TVET) and employment opportunities. The findings indicate that graduates have a strong perception on the positive relationship between TVET and graduates' employability and this perception is significantly affected by the 'skills development factor'; conversely, their views are minimally impacted by the 'job benefits factor', which includes aspects such as salary and quick employment. This indicates that students prefer TVET for its practical capacity to enhance their skills rather than for immediate financial gain.

These findings challenge the current policy narrative, which argues that enhancing employment outcomes will generally boost the appeal of TVET. Based on the findings of this study, it is clear that there is a significant need for policies that would promote the true value of skill development, which will ultimately lead to improved employment prospects and more industry participation. The study recommends that enhancements to the curriculum, personalised skills, productivity capacity, and strengthened overseas industry connections might align student expectations with labour market realities. It highlights the necessity of perspective-based approaches for evaluating the value of TVET. These insights can inform further research and strategies aimed at enhancing the attractiveness and efficacy of TVET as a learning pathway.

It is crucial to consider the shortcomings of the current study when interpreting the data. This study was conducted using a cross-sectional design, which means that data were collected at a single point in time. Therefore, we cannot interpret the results as evidence of probable causality

(Warner, 2013). Future studies should employ longitudinal methods to investigate potential changes in the connections between the concepts discussed in this study over time. Snowball sampling has the potential to add bias to the sample selection process. The findings may not be representative of all TVET graduates or generalized to other locations or institutions. We need more research to determine the applicability of the findings of this study to other TVET institutions and/or other regions of Bangladesh. Further, the study only explores student perceptions, no data was collected from other stakeholders, such as TVET teachers, administrators, and policy makers. In addition, online surveys are susceptible to answering biases such as social desirability bias, in which participants provide responses that they consider to be more socially desirable rather than reflecting their actual experiences or beliefs. Furthermore, not all participants seemed to have a clear understanding of the purpose of the questionnaire and the meaning of the questions. Therefore, this study recommends that future researchers use a qualitative approach to achieve more insightful results.

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Appendix

Online Survey Questionnaire

Dear Participant,

I thought of conducting research titled "Graduates' perception of the relationship between Technical and Vocational Education and Training and graduates' employment prospects: evidence from Bangladesh'. You are kindly requested to participate in this research and give your truthful replies. It may take about 10-15 minutes to complete this questionnaire.

I will treat your information confidentially. Please feel free to ask anytime if you do not understand a question. Thank you for your cooperation.

Section 1 of 3 (Participant's Consent)
Do you want to participate in this survey?
Yes
No

Section 2 of 3 (Demographic Data)

Please complete these questions by writing the space provided or selecting appropriate response/s.

1. Name: .....
2. Gender:

Male
Female

3. Age:

18- 20 Years,
21-25 Years,
26-30 Years,
More than 30 Years

4. Technical Educational qualification:

Higher Secondary/Diploma
Bachelor or more

5. Polytechnic Institution from which you completed higher secondary or diploma:

Habiganj
Moulvibazar
Brahmanbaria

6. Current Employment Status:

Employed with full time/part time/fixed time job
Self-employed
Unemployed

Section 3 of 3 (Items related to graduates' perceptions)

Please select the appropriate option for each of the following statements.

5 –Strongly Agree (SA), 4 – Agree (A), 3 – Neutral (N), 2 – Disagree (D), 1 –Strongly Disagree (SD)

No.	Items	SA	A	N	D	SD
7	TVET provides specific skills needed by employers					
8	TVET leads to well paid jobs					
9	TVET helps in developing practical skills					
10	TVET provides theoretical knowledge					
11	TVET motivates for lifelong learning					
12	TVET leads to higher productivity in job					
13	TVET graduates need less time to find job					
14	TVET offers more overseas employment skills					
15	TVET enhances entrepreneurial skills					
16	TVET enhances graduates' employment prospects					

Thank you very much for your cooperation!